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October 27, 1999

Mr. Kevin Mason
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SUBJECT: Cell Site Noise Study (WOR008A) Telecorp: Winter Hill Water Tank

Dear Kevin,

Telecorp proposes a cell site at the Winter Hill Water Tower in Worcester, Massachusetts. This report is a summary of our noise studies and measurements, performed in order to show compliance with the Massachusetts Department of Environmental Protection Criteria for Environmental Noise, and the Worcester Noise Ordinance.

Figure 1 is a plot plan, which shows the location of the existing water tank, and nearby property lines. Also indicated is the proposed location for equipment under the water tank, which is in the center of this water tower parcel.

The Massachusetts Department of Environmental Protection Criteria indicate that noise from new equipment should not increase existing noise levels by more than 10 dBA, and should not produce a pure tone condition.



The Worcester Noise Ordinance says "all noise, vibration or flashing should not be perceptible normally without instruments either at a point more than 350 feet from the premises at any point within the nearest residence district more than 150 feet beyond the nearest boundary of said district, whichever point is nearer to the premises." Note that this Worcester Noise Ordinance is difficult to understand. We interpret the ordinance to require that noise from this equipment should not be louder than existing noise levels at a point 150 feet beyond the property line.

We placed a noise monitor, which continuously samples ambient noise levels, near the water tower parcel, and this monitor sampled noise continuously from mid-day Tuesday October 5, 1999 through mid-day Thursday October 7, 1999. The background noise levels late-night Tuesday, October 5, 1999 reached as quiet as 26 to 32 dBA in the very late night hours. Note that late-night Wednesday, the noise levels reached as low as 30 to 34 dBA.

For our analysis, we have used a value of 29 dBA, which is extremely quiet, as the existing late-night background sound level.

We have also measured the type of equipment which is proposed for installation, namely base transmitter system equipment. We used this measured data for our calculations.

Figure 2 summarizes the results of our measurements and our calculations. Figure 2 shows the following:

- The existing late-night background sound level spectrum, with an overall level of 29 dBA. Note that the spectrum (i.e. the frequency components) have been estimated, based on a vast number of previous similar noise measurements. Note that the spectrum excludes any effects from insects, such as crickets "chirping".
- The projected future BTS (base transmitter system) sound level spectrum, projected to a location 150 feet from the property line, as discussed above. The overall noise level would be 26 dBA.
- The figure shows that the future BTS sounds will be lower than the quietest late-night noise levels which presently exist.

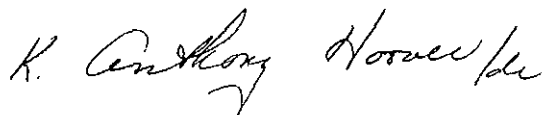
Figure 2 clearly shows that the proposed BTS installation will satisfy both the Massachusetts Department of Environmental Protection Criteria and the Worcester Noise Ordinance.

In summary, the proposed BTS equipment should satisfy the applicable noise ordinances and criteria. No noise control measures are required.

Please do not hesitate to contact us if we may be of additional assistance.

Sincerely,

CAVANAUGH TOCCI ASSOCIATES, INC.

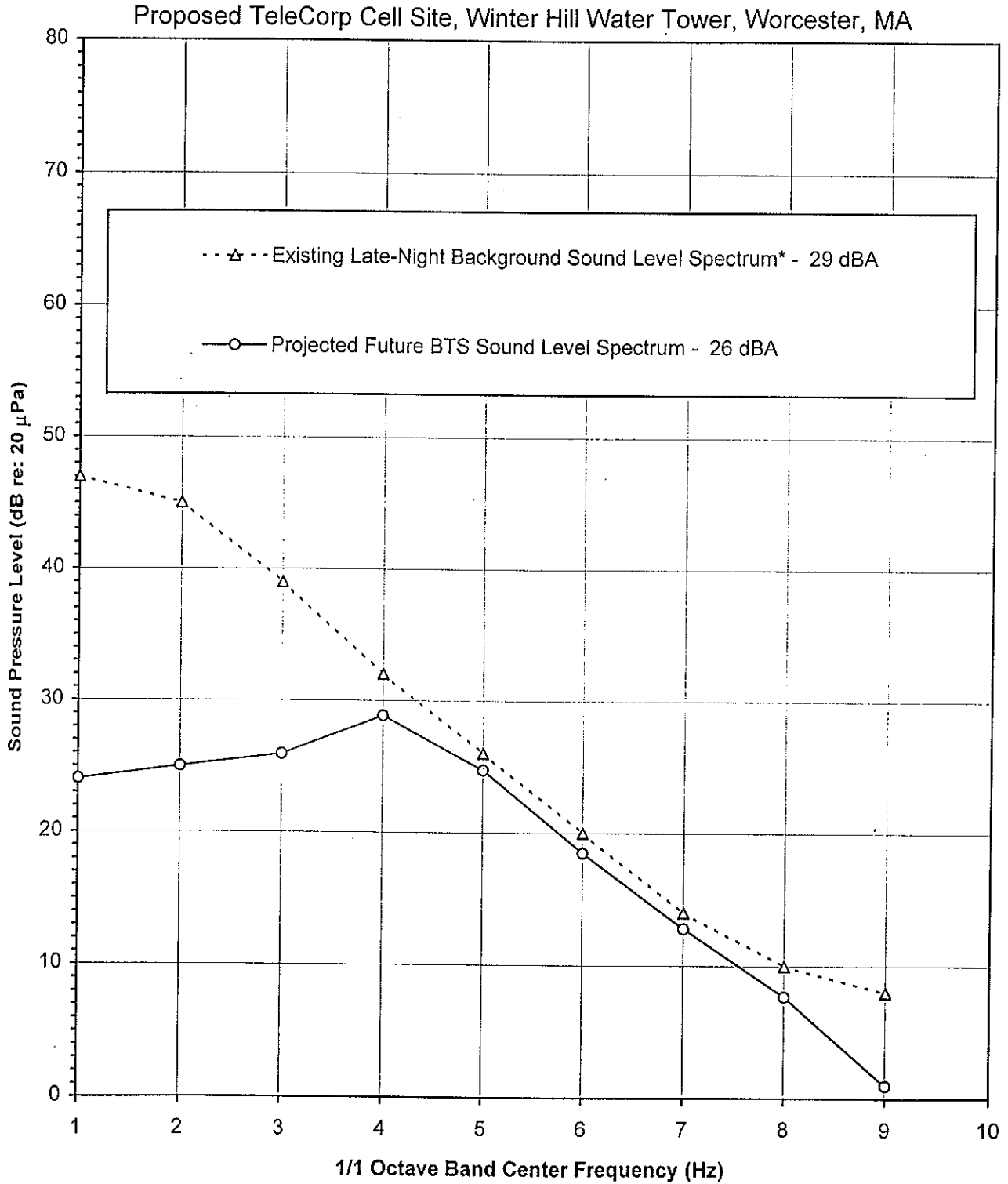


K. Anthony Hoover

KAH/dr/99364



FIGURE 2 :
Estimated Sound Levels 150-foot West of Project Site Property Line



* estimated octave band spectrum
based on measured
26 to 32 dBA
range in late-night hourly L_{90s}

FIGURE 2